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# WAR and FARM WORK

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by
Robert C. Tetro
AGRICULTURAL ECONOMIST and
Martin R. Cooper
SENIOR AGRICULTURAL ECONOMIST

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF AGRICULTURAL ECONOMICS
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This publication has been prepared from State college publications and from suggestions contributed by farm-management specialists of the Bureau of Agricultural Economics. It represents a first step in streamlining our farm jobs to the war. Used in conjunction with a series of reports now being prepared on monthly labor requirements by States, it should aid materially in taking care of farm-labor shortages.

WILLIAM J. ROGERS
*Office for Agricultural War Relations*

# WAR AND FARM WORK

*By*

**ROBERT C. TETRO**

*Agricultural Economist*

and

**MARTIN R. COOPER**

*Senior Agricultural Economist*
*Bureau of Agricultural Economics*

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## The Problem

A fighting war calls for the best effort of all men, women, and young people. World War II is no exception. The next year will see 5 to 10 millions of our men in the armed forces. More millions of men and women will be engaged in backing up the fighting men with munitions and supplies, right down to the little girl who holds yarn while her mother winds it, or the boy who fills the wood box that fuels the stove that feeds the men who grow the crops that feed the United Nations.

War has always taken men from farms. Today, the tank and plane assembly lines are adding to this draft of farm manpower. The constantly increasing needs for men in the armed forces and the war industries make it difficult, in some cases impossible, for farmers to get as much hired help as they want. And these difficulties are arising at a time when record production of farm products is needed.

Several Government and private agencies are already taking steps to cut down crop losses that might result if harvesting labor were too little or too late. The Agricultural War Boards and the Selective Service are trying to keep boys on any farms on which they are badly needed the year round. Areas where critical shortages may occur are being studied with a view to preventing hardship or loss from a shortage of workers. The situation in 1942 may not be too bad except around key defense areas where able men or women can get good paying jobs in a factory. Later years will increase the need of doing everything possible to get along with a reduced labor supply.

This publication is concerned with the labor problems of the farm itself and of the farm family. The Nation has a big job which must be done with the least possible waste effort. Idle time on the farms

and elsewhere must be reduced. How can it best be done? Here are a few suggestions gathered from every section of the country. They may make you think of other ways to save time on the farm, to save our heels by better use of our heads, or to use the family to back up the fighting line.

More ideas and comments are invited. Send them to the Bureau of Agricultural Economics, United States Department of Agriculture.

## A Farm Timetable

A good timetable is vital to all effective operations. Although we think of timetables as belonging to railroads, actually they can be used in wider ways. Even the railroads have timetables that most of us never see, for millions of tons of freight have to be moved with or

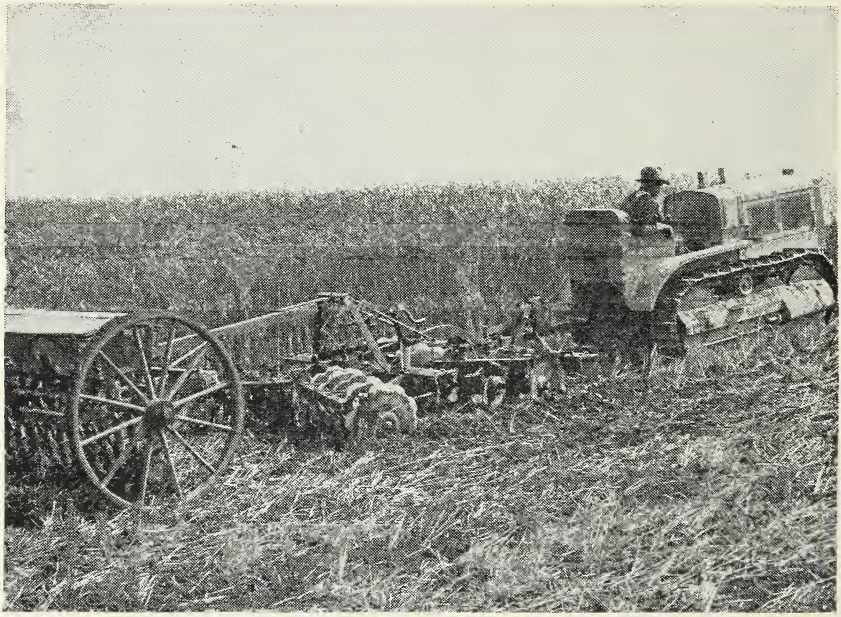

FIGURE 1.—Disking and seeding cowpeas right behind the combine—a good example of a labor-saving, timely operation.

around the passenger trains. The automobile assembly line is an excellent example of perfect timing. Today airplanes and tanks also are being made on schedules that bring each piece to its proper place at exactly the proper time—a modern miracle of engineering.

Farm timetables are the result of planning farm operations; or they are the application of common sense to the operating problems involved in raising crops and livestock and marketing the produce. Occasionally a farm is organized so simply that the farmer can do all his calculating in his head. Others are so large and complex that complete accounts are kept and are audited regularly. It is much easier, of course, to plan the timely use of equipment and labor if equipment is plentiful and if extra hired hands can be picked up on street corners

any day in the week. War changes all that. This year, farm operations must be well planned to thread a successful way through less labor and less new equipment and yet reach greatly increased production.

Most farmers want to get the best use of their time and the family time, not just for next week but for the entire year. Every farm operation—plowing, seeding, hoeing, combining, corn picking, and dozens of others—ought to go down on paper as jobs to be done at certain times. Hauling supplies and cutting wood can be listed for winter and other slack periods. Naturally, some allowances have to be made in order to meet whatever weather conditions may arise. At the same time, another list is made of jobs that must be done but that can fill in on rainy days or off days, or which don't have to be done this year. In this second list may go many small jobs like carpentry, plumbing, and repairs of all kinds. The list might be posted by the kitchen door—spare-time work for any working member of the family.

### Operating on Schedule

Many farmers have always had to hire a little labor to get them through busy seasons like plowing, picking, or thinning. Some of this is unavoidable, but by more carefully planning the rotations, changing the practices, or spreading out farm jobs where feasible, farmers may level out their worst peaks of work. In some areas, level land can be plowed in the fall and harrowed in the spring, especially where snow covers the ground through most of the winter. Timely and careful plowing, harrowing, and cultivating may keep away many a weed. Where weeds are always a problem, timing is very important because the later the cultivation or weeding the worse and longer the job that has to be done. In winter wheat areas, some farmers may find that they can spread out land preparation if they will go over their stubble right after combining. A double-disk, or some other cultivating implement will leave a trashy or stubble mulch that is moisture-holding and allows more choice of time to carry out other operations. Land continuing in row crops can be listed in the fall with about the same benefits.

Spreading out of planting dates will even out the demands for labor during planting but it also will spread the needs for labor during all the other operations right through harvest. Truck-crop farmers, who often grow from 5 to 25 crops with double and triple cropping, are well acquainted with the time-saving possibilities of staggered crops, but many other farmers also benefit. In the South, cotton farmers can't plant so late that damage from boll weevil, frost, and rankness will be increased, but they do have some leeway on cotton and more leeway on peanuts. Many peanuts for oil are being raised in the South this year and some farmers will plant both Spanish and Runners, for they mature at slightly different dates—different enough to ease some of the load during the digging. Over in the Mississippi Delta, farmers will find that growing soybeans and oats along with their cotton and corn, will mean that they will need much less labor at any one time than would be necessary for the usual cotton-corn organization.

Corn Belt farmers are probably going to find the corn picker and the combine-harvester both fighting to get the tractor when corn and

soybean harvests come along. This competition can hardly be avoided; it will require careful timing of all operations. Labor may be saved where early-variety soybeans are grown if a winter grain is seeded right after the combining is done. In such cases, the soil-loosening characteristics of soybeans make it possible, and in some cases advisable, to do without plowing and harrowing before the grain is seeded.

Time and work can be saved in some areas where small grains will produce just about as much feed as does corn or grain sorghums. Parts of the Great Plains get as much feed per acre from barley as they

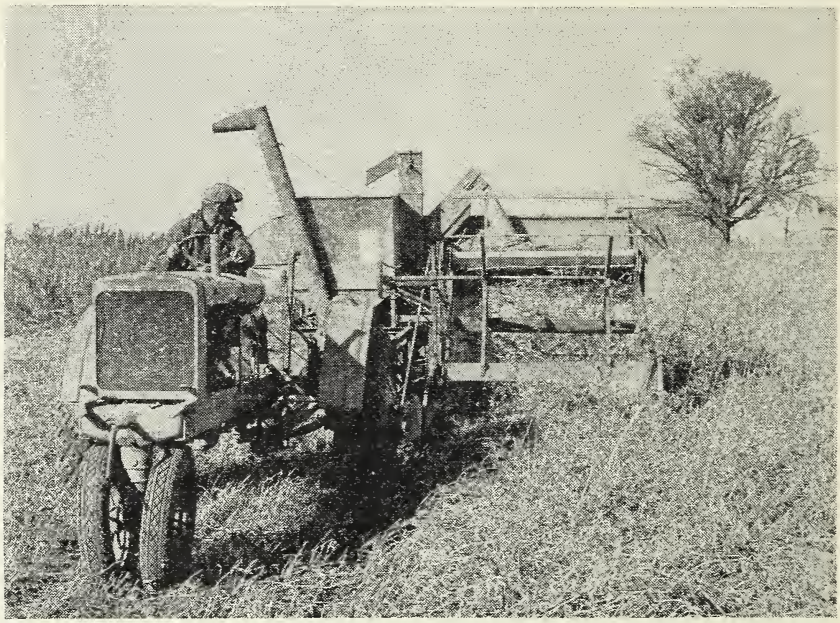

FIGURE 2.—One man doing a lot of work with a modern small combine. Other war needs limit new purchases, but better utilization of machines on hand will help farmers over labor rough spots.

do from corn and it comes easier. Wheat is about as good as any other feed crop in some sections of the Pacific Northwest and new varieties of oats and barley are rapidly gaining favor as feed crops in rotations in many parts of the country—especially the winter varieties of the South.

### Cropping to Save Labor

Where the family labor supply is really cut down, many farmers are planning to grow small grains and pasture grasses instead of row crops. If small grains are substituted, the harvest labor is less and can be scattered over more weeks. In the South, the hay crops save the job of pulling fodder. If grasses and grains can be pastured, the livestock take over the job of harvesting.

This conscripting of livestock as harvest labor can be more widely adopted. Many crops have such possibilities, including corn, soybeans, peanuts, field peas, and beans. A word of warning is necessary

here because haphazard pasturing can be wasteful. Hogs can harvest the corn, but if fields are wet or if the hogs roam over too big an area they will be choosy and extravagant, and perhaps will tread much corn and stalk into the ground. Moderate stocking of range and pasture will allow longer and better grazing seasons; this practice allows a reduction in winter feeding, saves the labor of that feeding, and saves the labor required to grow the crops that are fed.

Labor-saving farmers find that they can harvest alfalfa almost as easily as one of the lighter hays. And if there is an actual shortage of labor, and a farmer has to cut down, he can get more by keeping his best land in cultivation. He can also get more per hour of labor by having his heaviest yielding crops near the barn. He does not want to waste time by riding a mile to get 10 tons of silage corn and then going only 200 yards to get 1½ tons of clover and timothy.

Staggering the crop schedule is not the only way of stretching out farm labor or easing the work load. Many dairy farmers have not yet planned their cow freshenings in a way that will even out milk production. Perhaps this is still not advisable if the crop program involves "milking-off" pasture but better breeding and handling programs in dairy or beef cattle have not yet been adopted as widely as is practicable. Both livestock and crop programs could be more carefully planned to save time and make money in many areas.

### Planting

Farmers can never be sure of the weather. Under usual conditions, however, planting at the "right" time saves replanting and too much cultivation. A good trick in row-crop planting involves careful testing of seed for germination and then planting with spacing that cuts thinning to a minimum. In early cultivation of young corn, a one-horse weeder with its light spring teeth can do a much faster job than a cultivator. This weeding can be done even after the corn is pretty well out of the ground.

In the South, much cultivating time can be saved by using full-row or two-row equipment wherever it can be made available. When labor is scarce, it is easier to have one more horse or mule for each man and use larger, more efficient equipment all around. However, in cultivating it doesn't pay to stick to a planned schedule no matter what the land's condition may be. In dry years especially, over-cultivation is worse than none. If the weeds aren't there or if the ground is not caked, a cultivation can be delayed or skipped entirely.

### A Penny Saved

Although war is destruction in itself, it also demands the closest attention to preventing unnecessary losses. Whenever a barn burns, the immediate loss includes the lumber, iron, and whatever else was in the barn, but the labor and materials that must go into the replacement of the loss may be badly needed for other war work. Adequate safeguard against such losses is thriftiness that is good business at any time. During war, it's vital.

There are countless ways to save time by thrifty farm operation. Necessary repairs to machines and buildings are savings if they prevent loss of time, spoiled crops later, or longer use of equipment.

Proper care of hays and grains will save the added work of moving them later or the lost work if there is mold or fire. The extra minutes required to keep sacks dry and clean will be more than repaid by having those sacks when you or someone else needs them. Bothersome gates and doors that are only half-hung can be repaired in an odd minute—saving time and temper. If you are in doubt about the condition and safety of your buildings and equipment, have a friend or someone who has never been on the place give a thorough inspection for fire protection, efficiency of building lay-outs, condition of equipment, and anything else he wants to examine. But don't ask for criticism unless you really want it.

Good fencing is a thrifty necessity on livestock farms. Many an hour has been lost in chasing pigs out of gardens, keeping the cows out of the corn, and working over animals made sick by their unusual feasts on what should be forbidden land. Fixing or running fence is supposed to be a spare-time job, but it never should be put off too many tomorrows. Good temporary fencing is needed when crops are to be hogged-off or when livestock are placed on rotation pasture and stalk fields.

Health of the family and hired workers is in a way dependent on thrifty management. Well-balanced diets and adequate rest will help make life more worth living by reducing sickness, increasing the amount of good healthy work accomplished, and leaving some vitality when work is done. Lives lost and time wasted through preventable accidents and sickness are the best argument for the old saying that an ounce of prevention is worth a pound of cure.

### Lazy-Wise Farmers

Lazy-wise people are often efficient workers, just because they are ingenious in avoiding unnecessary work. Some of us can learn a lot by watching those neighbors who seem to have so much time to amuse themselves. Their dairy cows are in the lane at milking time either because they have been grain-trained or because a good dog was sent out a short time before. Their hen houses have easily removable dropping boards that save cleaning time. Their hog troughs are moved by rolling them around the yard like wheelbarrows. Their plows scour cleanly and cut well. Their oil and gas barrels are set in "rocking chairs" that almost seem to work themselves. Their temporary fencing is likely to be electric, but if it isn't, the wire may be held by a nail dropped between two staples permanently attached, in tandem, to most of the posts. Somehow, they never seem to work hard except when they're developing a new gadget to make their future work still easier.

After the work is made as easy as possible, it sometimes pays to examine the necessity for "necessary" work. For example, contour tillage is a valuable conservation practice, but many extra steps can be saved by careful planning of the field lay-out. For example, correction strips and rotation strips may be located so as to provide lands for cultivation of fairly uniform length and width. It may not be necessary to follow the exact contour on fairly level fields and on less erodible soil types. Contour farming will be made easier if fencing and field arrangement are made to conform more closely

to the contour, thus cutting out a lot of short rows. In most cases contour tillage saves tractor fuel.

Changes in operation are needed to save some crops or to increase the productivity of farm labor. For example, the East has been bothered for years by having to cure hay crops during a pretty wet season. Many farmers now get around this by putting up grass silage. In the Pacific Northwest, grain handling in sacks became widespread because shipping some years ago did not handle bulk grain. The war, with its labor and sack shortage, is adding emphasis to the recent shift to the more economical bulk handling of these grains. Cash-crop farmers all over the country may be able to increase their contribution to food production, if they add more livestock to their system of operation.

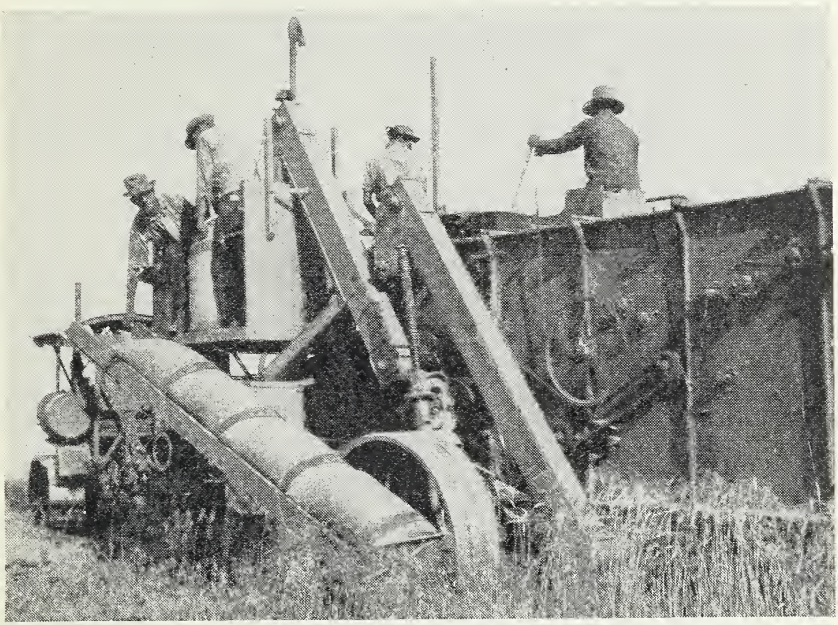

FIGURE 3.—Bulk storage and equipment for handling grain could cut this labor by one-third.

Everyone's time will be saved if plans are made to get more production per head of livestock or bigger yields per acre. It is easier to get more milk from a few cows by heavier feeding than it is to take care of one more cow. Heavier planting may be the answer on some crops, but others, like soybeans and strawberries, may yield more with wider spacing; State colleges have much valuable information on this topic. The real job in setting up a timetable, or calendar of operations, is to make the most of what you have. This, of course, does not mean planning to do without hired help, but it does mean that a farmer should know a long time ahead when he will want that help and where he is going to get it. Operators of machines available for custom work will be very busy during the war. If you want them,

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sign them up well ahead of time—maybe even before you plant your crop.

## Fitting the Family to the Farm

The family is an ideal of free people. The right to spend a peaceful evening at home with his family is one of the most impelling goals for a fighting man.

The farm family has a way of life all its own. Many of us recall cozy kitchens with stoves bearing constant promise of favorite dishes; daily chores around the woodshed and barn—irksome at times but filled with challenges to the imagination; meadows stocked with slow-moving cattle; barns of a dozen odors; school parties, church dinners, taffy pulls, home work, family games, and reading round the center table, and dozens of other memories that tantalize farm-reared people. The modern farm, with increased mechanization, automobiles, town movies, and convenient stores, and similar advantages, still offers countless chores and plenty of housework for the family. In this setting, war will emphasize again the value of mothers and youngsters as help around the farm in work geared to the strength of each. Higher prices, shortages, and rationing will bring back many homely customs that have been almost forgotten.

Nearly all farms have some ways in which every member of the family can contribute to the well-being of the group. The family cows, chickens, garden, goat, sheep, all must be cared for, and their products must finally work their way to the table. In the many jobs that must be done the boys help dad, and the girls help mother, and everybody helps one another—not perhaps without a little persuading as the occasion demands it. Some girls think it great sport to help out on the farm during rush periods. Today, it's a good idea for the family to sit down and see just how they can be organized to do the daily chores. And to see what field and barn work (once done by John who had the attic room, board, and $25 a month) can be taken over by members of the family.

The advantage of raising, canning and otherwise preserving food on the farm will probably be greater in 1942 than it has been for years. Many factors forecast higher prices for purchased foods. The small chores can be handled as they always have. Feeding the family cow and chickens can be a job for a rather small boy or girl. It will be a good idea to have a few more chickens than the family needs. The surplus eggs can be sold, with the "profits" going to the son or daughter. As a matter of fact, a spending-money schedule, designed to reward each member for work well done, will help any family-labor plan.

The farm flocks of sheep, goats, or other browsers can be used to advantage as clean-up squads. The browsers can be moved around the farmstead wherever grass and weeds get too long and pesky, and perhaps the "herdsman" can be picking up sticks for kindling the home fires at the same time.

### The Housewife

Day in and out, the mother's job is one of the most important in farm life. On her skill in food planning, preparation, and serving will largely depend the health and vigor of the family and hired hands. This publication is not concerned with cooking as such, but here is one tip: Many farmers find that they can do a better day's work if they

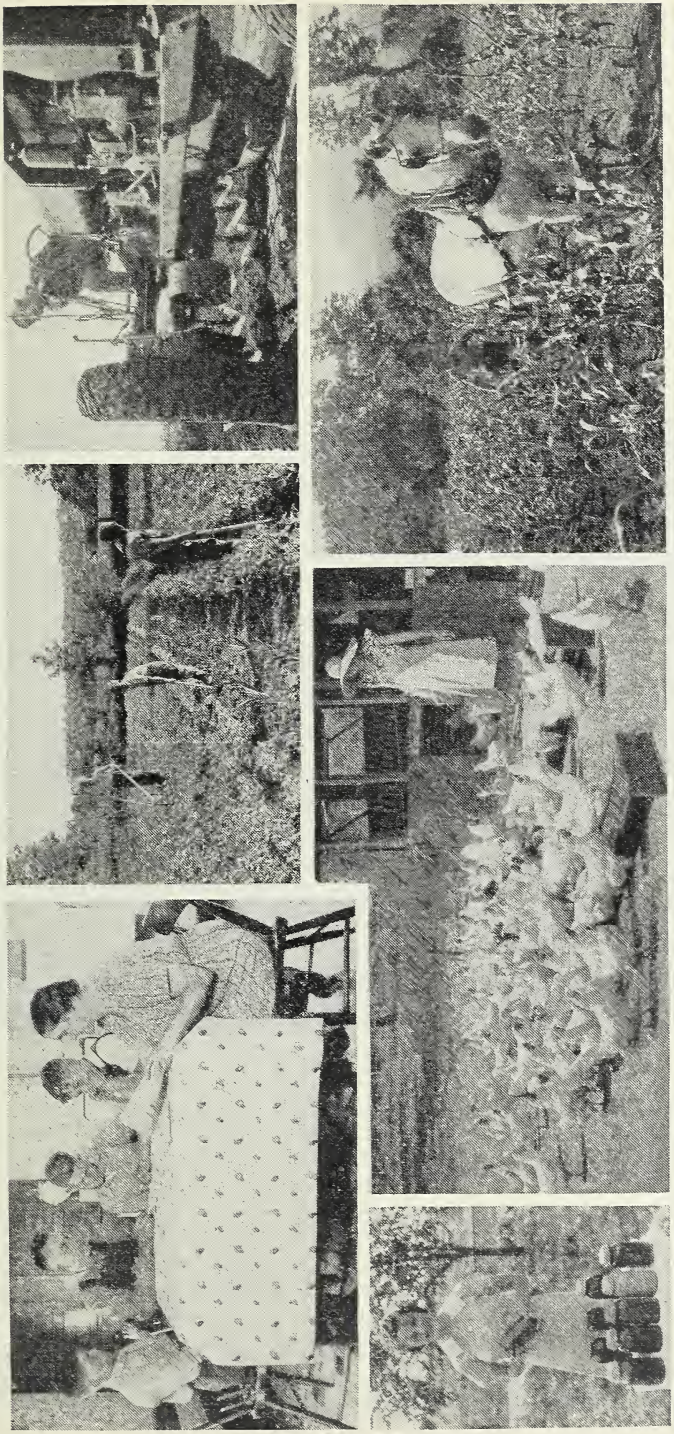

FIGURE 4.—Family plans for house, barn, and field work will have a job for every member of the family.

and their help have midmorning and afternoon snacks. This is particularly true during the long, hard days of harvest.

The homemaker's big work load in a home-use program comes at canning time. Perhaps everybody may help with the harvesting of fruits and vegetables, as well as with preparing and planting the garden. Weeding is not quite so much fun but somebody has to do it. Many families have no children; their best chance to put up some food is to work with a neighbor on a plan for canning together, or raising different vegetables and swapping.

### School Program

School must be fitted to the farm program or the other way round. In no case should extended periods away from school be planned. Far better will be a community effort to fit the school year to farm

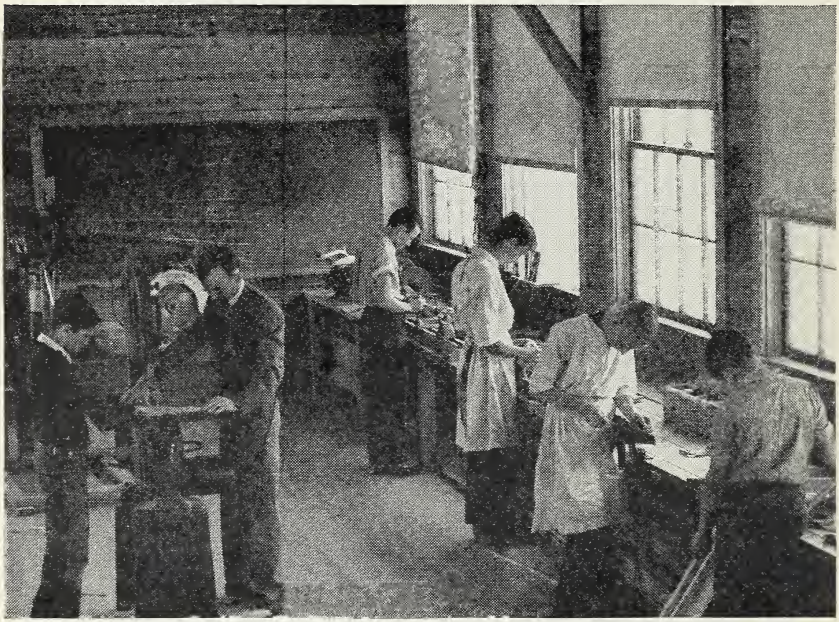

FIGURE 5.—Many boys from shops like this will be a real help in the emergency.

needs, if boys and girls are needed to help through harvest, planting, chopping, or any other big labor period. Many family jobs can be saved as week-end chores without asking too much of healthy children.

Schools can help greatly by examining their programs to make sure they're helping boys and girls to help at home. A course in tractor use will be far more useful in the next few years than one in Cicero's orations. Vocational teachers are in an excellent position to help and they are already doing it. Not only can they fit their courses to farm needs as usual but they can get the boys to bring in equipment that needs repair and mend it at school or can aid in making tools and gadgets that will save labor at home. Larger schools with agricultural-

education courses can plan to have agricultural pupils donate services (as a part of their course hours) to local farmers who have no youngsters and no chance to hire more help.

### Work for Youngsters

The family should take a long look at the year's work in the fields and barn and see if there aren't some more places where the family can appropriately help. Too often we tend to underestimate the adaptability of youth. Teen-age youngsters can and like to take a turn at driving the tractor and are often quite capable of handling teams if the animals are not too wild or heady. The dump rake, fork, sling, buck rake, bundle wagon, cultivator, lister, disk, and countless

FIGURE 6.—Within reasonable limits girls and boys can take on many field jobs that have been handled by hired hands.

machines of the simpler type are well within the ken of many grade-school youngsters. They can also hoe, weed, pick, and do almost any of the lighter jobs of farming. Obviously, the more careful ones should be chosen and the hours and conditions should be watched to make sure they are fitted to growing youth. At this age there is no real saving or pleasure in overwork. Mother and the girls may want to help on some of these jobs.

Wherever possible, give the lighter jobs to the lighter people, young, or old. Boys and girls should not be given all the hard work, especially while father is at the village store. Many so-called "fiddling jobs" are suitable—filling grease guns and oil cans, gathering eggs, filling feeders or waterers, cleaning seed, or sweeping the barn. Reasonableness and a strong recollection that we were all young once are the best guides in assigning work to children. However, once given the

job each member should take and carry through every responsibility that the job imposes. Right now patriotism will be a strong incentive.

It may be that "one boy is a boy, and two boys only one-half," but there are advantages in teaming up or grouping for many farm jobs that don't ordinarily use crews. Weeding, hoeing, and picking are less tedious when done in groups. Family "field days" can be organized for cleaning the yard or the hen house, painting, fixing fence, and many similar jobs. Whenever the field day is possible it has the advantage of strengthening family spirit and is the stuff of which memories are made. This year the plan may well be extended to lighter field work if labor is short and can be rounded out with one of mother's best feasts.

## Working Together

The good-neighbor policy was a byword in country affairs long before we began extending it to our friends in Latin America. Barn raisings, corn huskings, sitting in with sick neighbors, doing Joe's chores, borrowing and lending, all have been part of the American farm scene. This neighborliness was easy in colonial days when farms were nearly all within a "hoot and holler" of each other—a necessity in pioneer home protection. Amazing, though, is the way friendly working together has continued in plains and range areas where home farms have been miles apart.

Tight situations in both labor and equipment are likely to tie still more strongly the bonds of neighborly cooperation. Expensive machinery may be bought by two or three farmers together, each of whom needs the machine to offset a labor shortage. Deals like this have worked well and will work well again, but all the purchasers should get together and plan carefully just where and when the machine is going to be used. If this is done, there will be fewer conflicts in the use of the machine. Whenever machines for harvesting, like silage cutters, combines, corn pickers, and binders, are used by several farms, considerable care should be used to get the most out of the arrangement. The smallest possible crew should be used, and the extra men kept at home on other jobs, fall plowing for example. This is just another case of using scarce resources wisely.

Every farmer should get together with his immediate neighbors and go over the year's plans. Wherever there are two-man jobs such as sawing wood, putting up and moving small buildings, or handling livestock, plans can be made to work together in getting them done. Men with small farms may find that they can trade a few days' hand or horse labor with some neighbor for the use of his combine or corn binder. In more open country, turns may be taken in herding flocks of sheep made up from several small farms.

### Trips to Town

Since our rubber supply has been cut off, our tires have become a mighty valuable asset to be protected as much as possible. Many farm families are already saving rubber by doing away with practically all unnecessary trips to town. It may be too much to expect farmers to cut out the Saturday afternoon junket with the family, but perhaps neighbors can double up on these trips as well as on the

business errands. In some milk- and cream-producing areas, neighbors are planning to take turns in carrying the cans to town or down to the truck at the crossroads. Groceries are being bought more wisely by some families to avoid extra trips, and when an extra is necessary, they phone the neighbors to see if they can save those families an extra run. The hauling of grain, fertilizer, and fuel offers other possibilities of cooperating to save tires and gasoline. If neighbors keep each other well informed about their plans, several hundred miles can be saved each year on auto and truck tires.

Many small farms have already been put out of considerable food production by the loss of hired men and operators to the Selective Service or to better-paid town jobs. A part of such loss in food pro-

FIGURE 7.—A two- or three-man sawing job that is on a long list of neighborly activities to offset labor shortages.

duction can be prevented if a real attempt is made to cooperate with the inevitable emergencies. When land or livestock is likely to go out of production, neighbors can get together and make plans to keep the loss as small as possible. Adjoining small farms, for example, might well be consolidated under one operator who could handle them both by purchasing a tractor or custom-hiring some of the work done. Or several neighbors might split up the stock and field work, with more money for everyone involved.

The spirit of cooperation on farms is never greater than when hardship is in the offing. Several outstanding examples of this have already been reported in World War II. One man in the East had two sons at Pearl Harbor and his only remaining son joined the Army. Too old to run his tractor-operated 120 acres, he was about ready to close up shop when a neighbor offered to prepare and harvest half the land.

Those two families will get through this war with stronger ties of friendship than they ever had before. Stories like that are getting numerous, but they will never become "commonplace."

### Community Tasks

Community committees have already been set up to aid in getting by tight spots. They are concerned with labor, machinery, seed, bags, fertilizer, and dozens of other materials. Coming up also are possibilities of sharing technical knowledge. Farmers who have grown soybeans or peanuts are asked to help their neighbors in deciding what to do and what to expect in growing these new crops. Committees can be clearing houses for local problems. If all farmers keep the committee posted on their operations, especially concerning idle man and machine time, members who are faced with small but irritating lacks of help can be helped over their rough spots. Then the committee can take the responsibility of getting extra hired hands from outside to meet unusual demands like those of harvesting and chopping.

So far as machines are concerned, some local dealer or garageman might be drafted by the community to take full responsibility for keeping all machinery in good repair and in good use. He might also help decide where and when new machines are needed. This cooperative repair service would take care of replacement parts, relocation of idle machines, and major repairs beyond the skills of most farmers. Actually, there's little new in such an arrangement; it is simply the wartime version of a peacetime job.

## Machines and Labor Saving

Farms today are more highly mechanized than they were 20 years ago. There are about 1,800,000 tractors on farms, 1,050,000 motor-trucks, and 4,200,000 automobiles—all constituting the greatest aggregation of mechanical farm power in the Nation's history. Better equipment has steadily increased the efficiency of labor, as multiple-row implements and many useful gadgets have come with the tractor. The two-row corn picker, improved planters, small combine-harvesters (the combine itself was not widely used before World War I), windrow pick-up balers, and many other mechanical aids have found a place in agriculture. Considerably less labor is now used for producing most of our agricultural crops than was used during World War I.

Restrictions now placed upon the manufacture of farm machinery make it highly desirable for farmers to use their machinery wisely and extend the working life of machines by proper and timely repairs. In 1942 farmers in many areas are raising crops new to them and so more combines, peanut pickers, haying equipment, milking machines, and several other pieces of mechanical equipment are needed in these areas. Great as this demand may be, the unprecedented need for scarce materials in still more essential war industries determines the practical limit of farm-equipment production for the duration.

However, new machines and parts to meet the minimum requirements of the Food for Freedom campaign are going to be manu-

factured in 1942. A few examples may be interesting even though statistics usually look like dull reading. As a percentage of 1940 quantities manufactured: Horse- or tractor-drawn potato planters, 72 percent; grain binders, 75 percent; combines, 6-foot and less, 92 percent; rice binders, 100 percent; hay press combines (windrow pick-up), 353 percent; peanut pickers, 500 percent; steel stock tanks, 52 percent; wooden stock tanks, 351 percent; steel stock pens, 50 percent; metal grain bins, 11 percent; silos, 90 percent; horseshoes and horseshoe nails, 90 percent; wooden wheelbarrows, 100 percent; steel (tubular) wheelbarrows, none; subsoil plows, 50 percent; walking-plow-type potato diggers, 100 percent; windmill pumps, 100 percent; small incubators, 60 percent; and power dusters, 103 percent.

FIGURE 8.—This hay loader fits the farm, and with a barn fork or sling saves much back-breaking labor. An acute shortage would find only two men in this picture, with one of the loaders doing the driving.

### What the Machines Can Do

The large numbers of machines already on farms will aid greatly in winning our food war, because certain machines not only save labor but also help to perform farm operations on time. Tractors are very important in timeliness of farm work. It is estimated that each new tractor (not counting replacement of worn-out tractors) will save approximately 450 hours of man labor annually if used on operations to which it is adapted, and if fitted with complementary equipment. Each grain combine cutting 220 acres of grain will save 1,000 hours of labor annually, compared with binder and stationary-thresher harvesting. A new corn picker will save about 420 hours on 140 acres of corn compared with hand-picking, and a new milking machine, if used on a herd of 18 cows, will save about 450 hours of hand-milking. These machines are very effective substitutes for labor on many farms, and the few new ones that may be had in spite of the war will be well used.

The quantity of labor saved by a tractor varies widely by types of operation. The tractor operator gets his plowing and disking done in half the time he once used with horses. From 25 to 50 percent can be saved in such operations as harrowing, cultivating, planting, drilling, and mowing. Horses still do a fine job in hay raking, spraying, and many other lighter operations.

### With or Without New Equipment

The war, even as the depression, is going to demand the most from farmer ingenuity, but the rewards in the form of higher incomes will usually repay the effort to get around shortages in labor and equipment. There are many ways to use lumber and old pieces of equipment to make workable labor-saving devices. Many farmers can find material to rig up a hay sling or a stacker that will save time and labor. In good hay areas particularly, a push rake and stacker can be used to advantage and livestock can feed themselves from the stack.

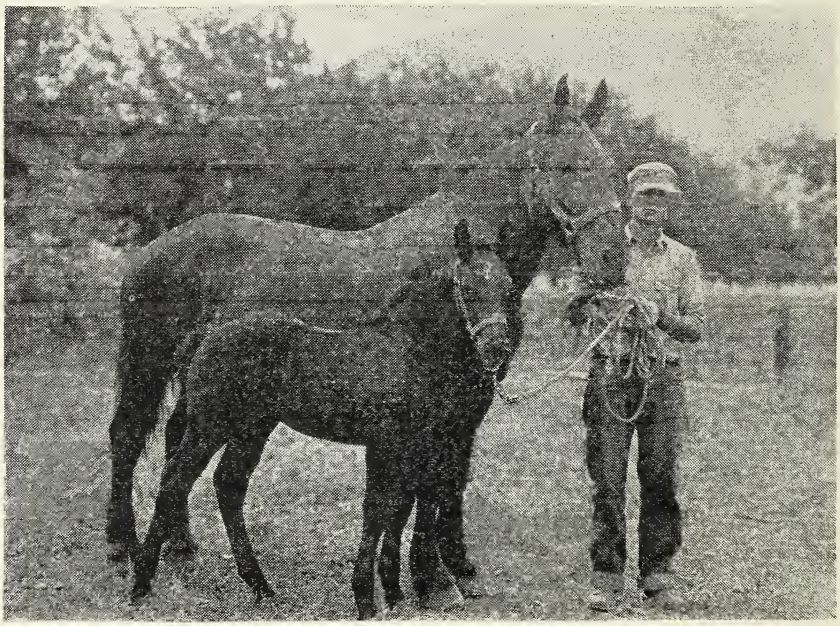

FIGURE 9.—A valuable source of power.

Automatic feeding and watering devices are already a common sight on livestock farms, but prospective labor shortages warrant still more of them. Pipe for water systems may be scarce, but trenches, diversion dams, and ponds can still be used, with proper sanitary precautions. Automatic feeders can be made at home; but in making them careful workmanship is needed to avoid wasteful kinds. Vocational teachers and college engineering schools have good plans which they are glad to furnish on request. In some areas, there is still much unnecessary water hauling—some largely a matter of habit and some because running-water systems or well digging have been too expen-

sive. The war period, with higher prices for products and higher farm incomes, is a good time to make these improvements if materials are available, because not only will labor be saved now but future operations will also be made much easier.

Considerably more attention should be given to the use of larger equipment, wherever it is available. In many cases, one man can double his output by replacing one-row outfits with two-row. In the South, one-mule, one-man, and half-row cultivators are not uncommon. Much more cotton and corn can be cleaned out if another mule and bigger equipment are given to the one man. The Northeast still has many one-row corn planters that could well be replaced. Tractors aren't a necessity in the use of larger equipment. Reports come in every day of farmers who have once again taken up multiple-horse hitches to move big outfits.

Whenever new equipment is adopted, the discarded implements should be reported to the Agricultural War Board because the older implement may well represent a labor-saving device to some neighbor, or even someone in another part of the country. These War Boards are keeping in touch with these needs and supplies so that every farmer can make the most of his labor.

### Doubling Up

Even with the same tools to work with, labor can be saved and power can be used more efficiently by doubling-up operations. A big tractor on a small plow looks inefficient, but when a small harrow and seed drill are hooked on back of the plow, labor and power are being used better. Not all land can be worked this way, nor is it necessary in some operations; but most reports indicate that many farmers aren't taking advantage of the power of their tractors, or even horses, as much as they might. On land that clods badly, the time savings from plowing and disking on the same hitch are quite large. Other possibilities of doubling up include using a combination planter and fertilizer distributor, running a small seed drill or disk behind a small combine on early soybeans, or a small one-way disk plow behind a small combine on winter wheat.

Of course, many doubling-up operations are going to take a lot of power, but many farms already have it in older tractors, the work loads of which have been seldom tried out. Then, too, if harvesting is custom hired the additional work may be done at an extremely reasonable cost. This planning to get the most out of power equipment can be carried over to other farm jobs. Small loads on big wagons, tractors on dump rakes, milking machines on five-cow herds, 6-foot combines on 2 acres of oats, all are examples of "men on boys' errands." They do exist, but they certainly are less appropriate to wartimes than the other extreme of a gang plow and disk running behind a large tractor for 24 hours each day. Many of our inefficient uses might be avoided by better cooperative arrangements among neighbors.

Some relatively simple items can total up to big timesavers in the strenuous months ahead. Butterfat haulers can cut out many trips to town by rigging up a cooler. Livestock farmers can save time if they use electric fences for temporary closing in of stock. In parts of the

South and West the inexpensive trench silo has been found a real advantage in saving row crops for livestock feed, and another time-saver has been added in the form of an unloading apron, placed under the silage in the wagon bed, which can probably be adapted to some hay and grain unloading.

All in all, there are many ways in which the farmer's ingenuity is going to add to the usefulness of what he has in both labor and machines. This ingenuity, along with the present supply of good, workable machines and the wise distribution of new equipment, will take care of our machinery problems on farms during the critical phases of the Food for Freedom fight.

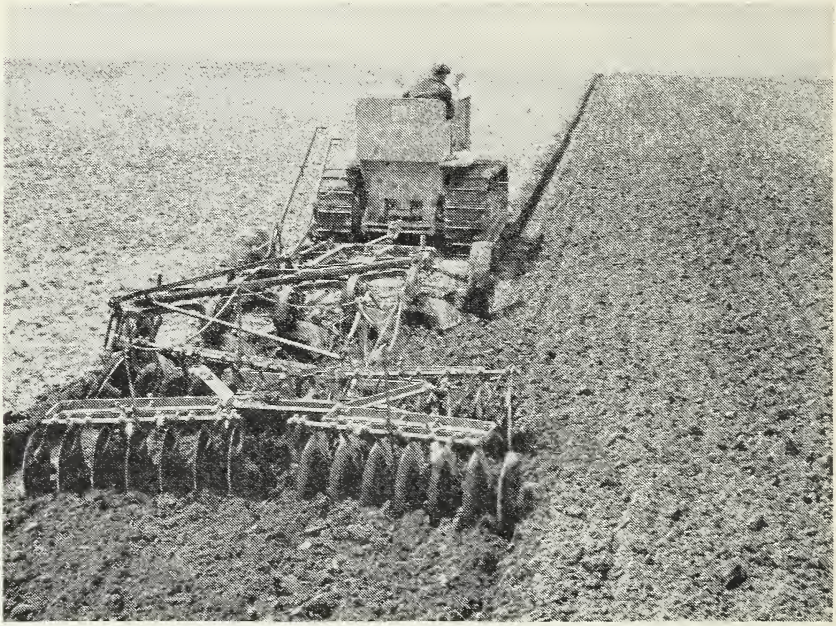

FIGURE 10.—This plow-harrow combination saves time and prevents the clodding that would slow down later working of the field.

## Hired Labor

Even where there is perfect cooperation of families and neighbors under the stimulating direction of a good operator, there will be a seasonal need for hired labor and local needs for regular hired hands. Many State and Federal agencies are struggling now to achieve an orderly solution of this problem and, except in isolated instances, they probably will solve it with the cooperation of farmers. In analyzing local labor shortages, at least two things should be kept in mind: (1) All laborers are commanding higher wages because basically it is costing more to live and because good laboring men are now scarce; (2) no farm in wartime can claim an actual shortage of working laborers if the operator and his adult family aren't in there doing their parts.

An examination of the immediate neighborhood may help to answer minor problems of labor shortage. Most towns have partly employed

men, semiretired older men, and boys of school age, all of whom may be persuaded or may be eager to help out on the farms. Some farmers with too little help may be able to arrange for a neighbor's boy before and after school hours to help with chores and even with light field work on week ends or during vacations. Of course, he is paid for it. In the case of older men, and with children particularly, employers should be carefully reasonable in their work demands. It is often difficult for a hearty farmer to realize the limitations of less rugged men and boys. He will have to realize in the first place that most of this help will be less able than the hired men of recent years, but certainly such help is better than no help at all.

In towns near farms that have heavy seasonal demands like fruit picking, cotton chopping, or grain harvest, it may be possible for the "town fathers" to organize the whole countryside to help get through the busy season. Schools and stores could be closed and all business virtually stopped until the crisis is past. Even this will not be the answer in places where a lot of laborers have always come in to help during busy seasons. In some such places, local groups have already been organized to handle the problem. The farmer's job is to figure out well ahead of time exactly how many and when extra laborers will be needed and to report his estimate to the local committee or government labor agent.

Critical shortages can often be met successfully if key men or bosses are available to help in supervising picking, thinning, or whatever the job may be. Over the long run more efficiency will be gained if some steady local men are chosen and trained for these key jobs of the rush seasons. Trouble can also be lessened if each farmer reduces his seasonal harvest crews to the smallest possible number and has them work over a longer period of time. Not only will it be easier to get the smaller number of men but also the smaller group is less likely to have poor workers in it and the men are more likely to appreciate a chance to stay longer in one place. These smaller crews are easier to supervise and even though they may be fairly green at first, the longer time of employment and the increased supervision are likely to mean a greater output per worker in the long run.

### Easing the Load

Wherever workers have to be hired for several weeks in a row, there are many devices which will help in maintaining a good working crew. The easiest device is a word of praise for work well done, particularly to younger workers or somewhat inexperienced hands. A fair scale of wages is a necessity in times when labor is in demand everywhere, but it may be a good idea for a farmer to protect himself with a piece-rate system which rewards the good worker and doesn't overpay the loafer. Piece rates or hourly rates adjust themselves automatically to long hours, but exceptional stretches of overtime can be made easier by some added attraction like an extra meal or increased wage rate.

Adequate hired help will be probably the toughest problem on farms, during the war. But it will also be the one on which the most national attention will be focused. The best procedure in critical areas is for local groups to meet and decide exactly what must be done to solve their problems. In these meetings, particularly in areas where farms must compete with war industries or where migrant seasonal labor

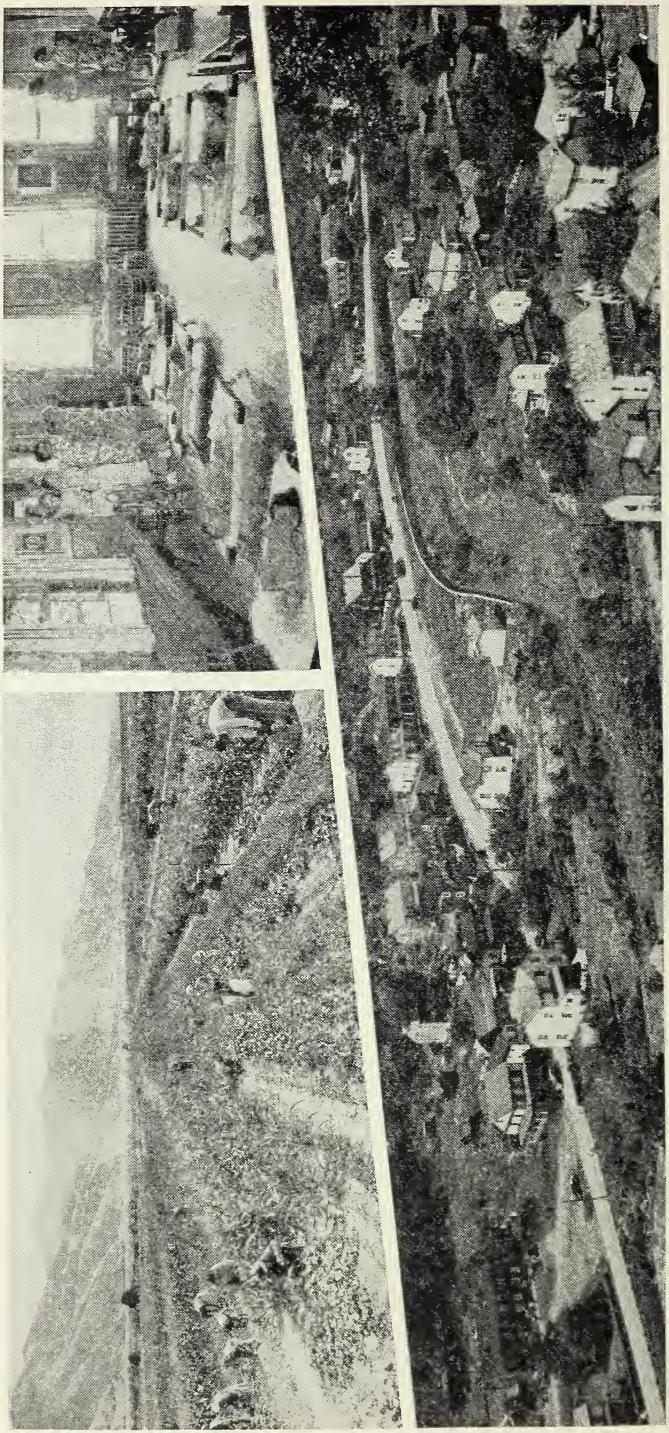

FIGURE 11.—Harvest demands for workers may use every able-bodied person in some rural villages; if so, a community nursery can set mothers free to help in light outdoor work or feeding harvest hands.

is needed, the local groups should consult with their Agricultural War Board and representatives of the Farm Placement Service, whose job it is to see that no area suffers from a production loss because of a labor shortage.

Whatever the schemes adopted to save labor and yet to produce more with the labor now on farms, the goals are the same. Every farmer in the country wants to be able to sit down after the war and say, "What did I do in the war? I produced food that gave stamina and courage to our fighting men and factory workers, and I added to the stock piles that helped us write the best peace ever."

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